INTERNATIONAL PAPER

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December 23, 2008

Mr. Russ McLean
State Coordinator - MS
RCRA Programs Branch
U.S. EPA Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street SW
Atlanta, Georgia 30303

Subject: **Dioxin Soil Sampling Report**
Former International Paper Wiggins Treated Wood Products Facility
Wiggins, Mississippi
EPA ID No. MSD 980 600 084

Dear Mr. McLean:

International Paper (IP) has prepared this Report to document the collection of soil samples for dioxin analysis at the former International Paper Wiggins Treated Wood Products facility in Wiggins, Mississippi. EPA requested that IP further investigate locations where pentachlorophenol (PCP) was detected in soils during the RCRA Facility Investigation (RFI) and Preliminary Corrective Measures Study (CMS), specifically at Solid Waste Management Unit (SWMU) 37 and SWMU 38. In response, IP submitted a *Dioxin Work Plan* on July 11, 2008 for EPA review and approval. The Work Plan was approved by EPA with some requested revisions in a letter dated July 24, 2008. On August 14, 2008, IP submitted the *Dioxin Work Plan – Revision 1.0* (Work Plan) incorporating the requested revisions. This Report summarizes the activities described in the Work Plan.

Background

As described in the RFI Report, SWMU 37 consists of the facility Drainage Ditches and SWMU 38 consists of the PCP Spill area. Samples collected from these areas during the RFI indicated the presence of PCP in surface soil samples at concentrations ranging from 2.96 to 782 milligrams per kilogram (mg/kg) in SWMU 38 and at concentrations ranging from 0.0589 to 1.47 mg/kg in SWMU 37 (see RFI Tables). As shown on the RFI Tables, samples from locations GP-12, GP-14 and GP-18 contained the highest concentrations of PCP detected in soil samples from SWMU 38. As shown on the RFI and CMS Tables, samples from locations DDSD1, DDSD14, DDSD16 and D2-C contained two of the highest PCP concentrations detected in soil samples from SWMU 37. Additionally, these samples are located in drainage pathways near SWMU 38.

Sample Collection

On October 21, 2008, representatives of IP collected soil samples at depths of 0 to 1 foot below ground surface (bgs) and 1 to 2 feet bgs at three (3) locations in SWMU 38 to replicate RFI sample locations GP-12, GP-14, and GP-18. Soil samples were also collected at depths of 0 to 1 foot bgs at four (4) locations in SWMU 37 to replicate RFI sample locations DDSD1, DDSD14 and DDSD16 and CMS sample location D2-C (Figure 1). The soil samples were collected in accordance with the procedures for sample collection described in the Sampling and Analysis Plan provided as Appendix C in the previously approved RFI Work Plan.

Laboratory Analysis

A total of four (4) soil samples from SWMU 37 and six (6) soil samples from SWMU 38 were collected for laboratory analyses. Additionally, 1 field duplicate, 1 rinsate blank and 1 matrix spike/matrix spike duplicate (MS/MSD) were collected for quality assurance/quality control (QA/QC) purposes. The samples were placed in laboratory supplied containers, placed on ice and transported under chain-of-custody protocols to Pace Analytical Laboratories in Minneapolis, Minnesota for analysis for dioxins using SW-846 Method 8280A per the approved Work Plan.

Data Evaluation and Results

The laboratory analytical data were validated in accordance with the procedures described in the Data Management Plan and the Quality Assurance Project Plan provided as Appendices D and E, respectively in the previously approved RFI Work Plan. The results of the data validation, along with the laboratory data sheets are provided in Attachment A.

Table 1 presents a summary of the dioxin concentrations detected in the soil samples along with the toxicity equivalency quotient concentration (TEQ) for each sample. The TEQ was calculated using the World Heath Organization toxicity equivalence factor 2005 reference (WHO TEF-05). Per the approved Work Plan, total dioxin TEQ values were compared to the recommended exposure values provided in OSWER Directive 9200.4-26, dated April 13, 1998.

As shown on Table 1, dioxin was not detected above the reporting limit (RL) in the sample collected from location D2-C. Dioxin was detected above the RL in the remaining nine soil samples. Total dioxin TEQ values ranged from 0.001 part per billion (ppb) to 0.977 ppb in seven of the nine soil samples where dioxin was detected. These concentrations are less than the recommended residential exposure value of 1.0 ppb.

Total dioxin TEQ values were greater than the residential exposure value of 1.0 ppb in only two samples both collected from 0 to 1 foot bgs in SWMU 38: GP-12 with a concentration of 9.862 ppb and GP-14 with a concentration of 2.544 ppb; however, as shown on Table 1, both of these concentrations are within the recommended range of 5 to 20 ppb for commercial/industrial sites. Additionally, the samples collected from 1 to 2 feet bgs at these sample locations contained total dioxin TEQ values less than the residential exposure value of 1.0 ppb.

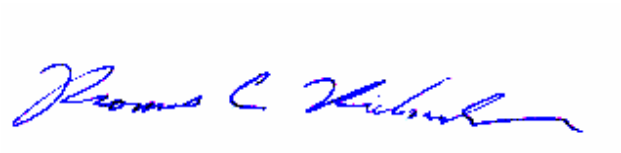
Summary

The soil sampling conducted in October 2008 indicated the presence of dioxin in 9 of the 10 samples analyzed. However, the total dioxin TEQ values for 7 of the samples were below the recommended residential exposure value of 1.0 ppb and the total dioxin TEQ value for the

remaining 2 samples were within the recommended commercial/industrial range of 5 to 20 ppb. Based on this information, IP does not believe dioxin to be a constituent of concern at the Wiggins site.

Please do not hesitate to call me (901) 419-3878 or Doug Seely (781) 577-1502 if you need any additional information or if you have any questions or comments.

Sincerely,



Thomas C. Richardson

cc: Thomas Kelly, MDEQ
Pam Jackson, Baldwin Pole Mississippi
Doug Seely, Premier Environmental Services, Inc.

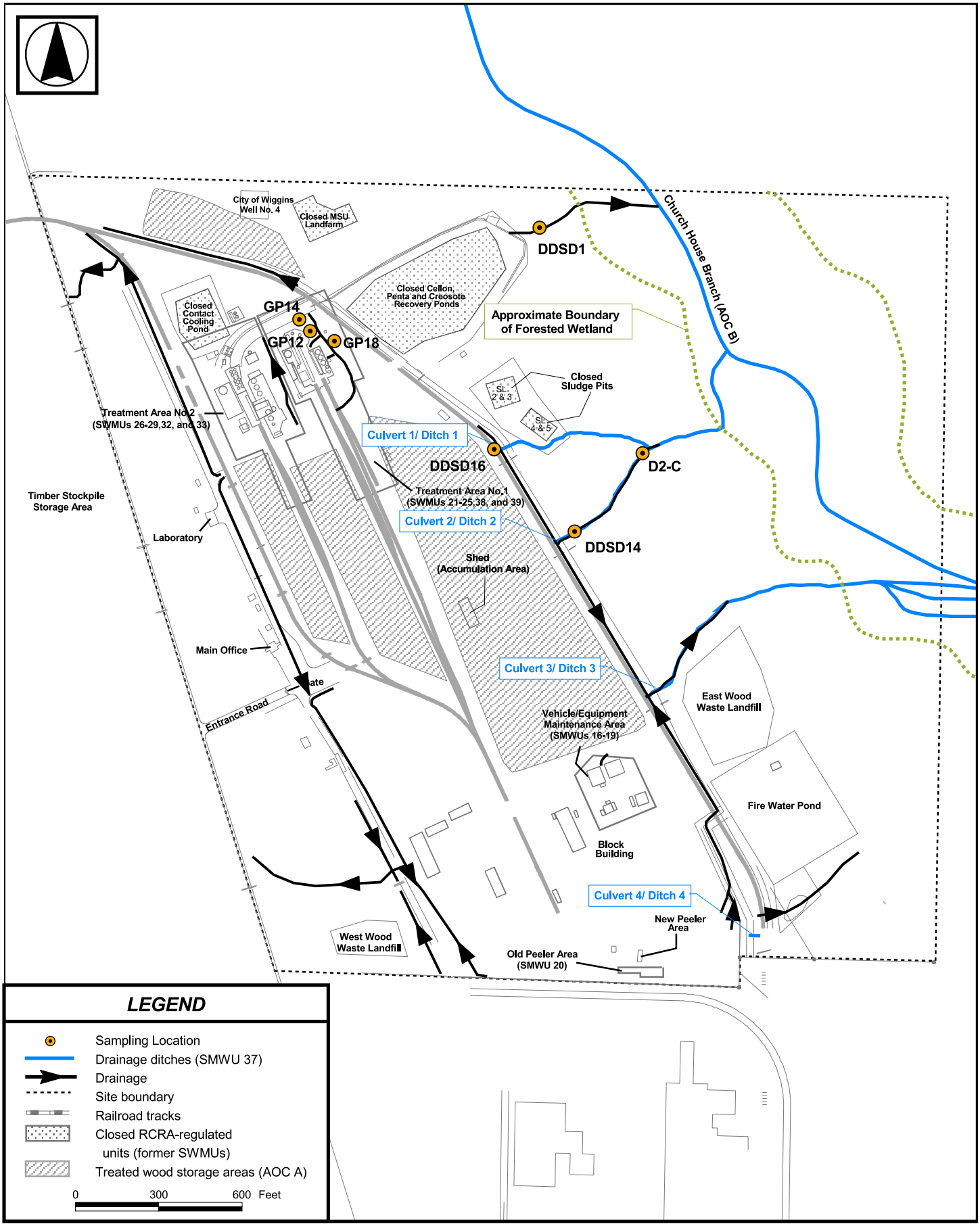


Figure 1. Sampling Location Map

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Table 1: Summary of Dioxin/Furan Soil Analytical Results - IP Wiggins, October 2008

EPA Method 8280	WHO	GP-12 (0-1')		GP-12 (1-2')		GP-14 (0-1')		GP-14 (1-2')		GP-18 (0-1')	
Analyte (ug/kg)	TEF-05	Concentration	TEQ	Concentration	TEQ	Concentration	TEQ	Concentration	TEQ	Concentration	TEQ
2,3,7,8-TCDD	1.0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,7,8-PeCDD	1.0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,4,7,8-HxCDD	0.1	5.1	0.51	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,6,7,8-HxCDD	0.1	19	1.9	1 U	0	5.6	0.56	1 U	0	1.8 J	0.18
1,2,3,7,8,9-HxCDD	0.1	8.3	0.83	1 U	0	1.7	0.17	1 U	0	1 U	0
1,2,3,4,6,7,8-HpCDD	0.01	410 J	4.1	22	0.22	140 J	1.4	12	0.12	41	0.41
OCDD	0.0003	4700 J	1.41	290 J	0.087	1200 J	0.36	130 J	0.039	380 J	0.114
2,3,7,8-TCDF	0.1	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,7,8-PeCDF	0.03	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
2,3,4,7,8-PeCDF	0.3	1.2 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,4,7,8-HxCDF	0.1	5.8 EMPC	0	1 U	0	1.1 U	0	1 U	0	1 U	0
1,2,3,6,7,8-HxCDF	0.1	12 EMPC	0	1 U	0	4.4 EMPC	0	1 U	0	1.1 EMPC	0
1,2,3,7,8,9-HxCDF	0.1	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
2,3,4,6,7,8-HxCDF	0.1	3.8 U	0	1 U	0	1.2 U	0	1 U	0	1 U	0
1,2,3,4,6,7,8-HpCDF	0.01	58 J	0.58	2.7	0.027	79 EMPC	0	6.8 EMPC	0	15 EMPC	0
1,2,3,4,7,8,9-HpCDF	0.01	8.2	0.082	1 U	0	1.8	0.018	1 U	0	1 U	0
OCDF	0.0003	1500 J	0.45	11	0.003	120 J	0.036	7.2	0.002	10	0.003
Total TCDD		1 U		1 U		1 U		1 U		1 U	
Total PeCDD		1.2		1 U		1 U		1 U		1 U	
Total HxCDD		59		1 U		14		1 U		4.4	
Total HpCDD		530		32		190		18		64	
Total TCDF		1 U		1 U		1 U		1 U		1 U	
Total PeCDF		7.9		1 U		2.2		1 U		1.4	
Total HxCDF		66		1 U		20		1.2		2.9	
Total HpCDF		220		8.8		56		1 U		6.8	
Total Dioxin TEQ			9.862		0.337		2.544		0.161		0.707
Industrial TEQ range	5 to 20										
Residential TEQ value	1.0										

Notes:

WHO TEF-05 – World Health Organization toxicity equivalence factor 2005
Reference - Van den Berg et al., The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

TEQ – Toxicity equivalency quotient concentration

U – Not detected at reporting limit shown

J – Estimated concentration

EMPC – Estimated maximum possible concentration

ug/kg - micrograms per kilogram or part per billion (ppb)

Table 1: Summary of Dioxin/Furan Soil Analytical Results - IP Wiggins, October 2008

EPA Method 8280	WHO	GP-18 (1-2')		DDSD1 (0-1')		DDSD14 (0-1')		DDSD16 (0-1')		D2-C (0-1')	
Analyte (ug/kg)	TEF-05	Concentration	TEQ	Concentration	TEQ	Concentration	TEQ	Concentration	TEQ	Concentration	TEQ
2,3,7,8-TCDD	1.0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,7,8-PeCDD	1.0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,4,7,8-HxCDD	0.1	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,6,7,8-HxCDD	0.1	1 U	0	2.2 J	0.22	1 U	0	1 U	0	1 U	0
1,2,3,7,8,9-HxCDD	0.1	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,4,6,7,8-HpCDD	0.01	1 U	0	56 J	0.56	5.2	0.052	21	0.21	1 U	0
OCDD	0.0003	2.4 J	0.001	630 J	0.189	68	0.02	190 J	0.057	1 U	0
2,3,7,8-TCDF	0.1	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,7,8-PeCDF	0.03	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
2,3,4,7,8-PeCDF	0.3	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,4,7,8-HxCDF	0.1	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,6,7,8-HxCDF	0.1	1 U	0	1.7 EMPC	0	1 U	0	1 U	0	1 U	0
1,2,3,7,8,9-HxCDF	0.1	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
2,3,4,6,7,8-HxCDF	0.1	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2,3,4,6,7,8-HpCDF	0.01	1 U	0	32 EMPC	0	4.4 EMPC	0	3.9 EMPC	0	1 U	0
1,2,3,4,7,8,9-HpCDF	0.01	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
OCDF	0.0003	1 U	0	26	0.008	3.7 J	0.001	12	0.004	1 U	0
Total TCDD		1 U		1 U		1 U		1 U		1 U	
Total PeCDD		1 U		1 U		1 U		1 U		1 U	
Total HxCDD		1 U		6.6		1 U		1.3		1 U	
Total HpCDD		1 U		87		8.3		33		1 U	
Total TCDF		1 U		1 U		1 U		1 U		1 U	
Total PeCDF		1 U		1.2		1 U		1 U		1 U	
Total HxCDF		1 U		6.8		1 U		3		1 U	
Total HpCDF		1 U		15		1.7 J		6.1		1 U	
Total Dioxin TEQ			0.001		0.977		0.073		0.271		0
Industrial TEQ range	5 to 20										
Residential TEQ value	1.0										

Notes:

WHO TEF-05 – World Health Organization toxicity equivalence factor 2005
Reference - Van den Berg et al., The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

TEQ – Toxicity equivalency quotient concentration

U – Not detected at reporting limit shown

J – Estimated concentration

EMPC – Estimated maximum possible concentration

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MEMORANDUM

Date:	November 25, 2008
To:	Carol Northern
From:	Mary Ann Brookshire
Subject:	Quality Assurance Review
Project:	International Paper Wiggins Mississippi Facility
Sampling Dates:	October 20 - 21, 2008

1.0 Introduction

This quality assurance review presents the cursory validation of the sample analyses listed in Table 1. The analyses were performed by Pace Analytical laboratory located in Minneapolis, Minnesota.

The criteria used to qualify data are from the *Contract Laboratory Program National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans Data Review* (USEPA 2005), the analytical methods, or the professional judgment of the validation chemist. The following laboratory deliverables were reviewed during the validation process:

- Chain-of-custody (COC) documentation to assess holding times and verify report completeness
- Initial and continuing calibration information and instrument performance checks
- Laboratory quality control (QC) sample results, including method blanks, surrogate spikes, laboratory control sample/laboratory control sample duplicates (LCS/LCSDs), matrix spike/matrix spike duplicates (MS/MSDs), and laboratory duplicates
- Analytical results to verify reporting limits

- Field QC samples to assess field blank contamination and field duplicate precision

The qualified data are summarized in Table 3 at the end of this memorandum. Data qualifier flags have been added to the attached sample results and database files.

Table 1—Sample Data Reviewed

Sample ID	Laboratory ID	PCDDs/PCDFs[a]
GP-18 (0-1')	1083073001	X
GP-18 (1-2')	1083073002	X
GP-12 (0-1')	1083073003	X
GP-12 (1-2')	1083073004	X
GP-14 (0-1')	1083073005	X
GP-14 (1-2')	1083073006	X
DDSD1 (0-1')	1083073007	X
DDSD16 (0-1')	1083073008	X
DDSD14 (0-1')	1083073009	X
D2-C (0-1')	1083073010	X
RB	1083073011	X
DUP-01	1083073012	X

[a] Dibenzo-p-dioxins and dibenzofurans by Method 8280B (USEPA 1996)

2.0 Data Validation Findings

2.1 Custody, Preservation, and Completeness

Sample custody was maintained as required from sample collection to receipt at the laboratory; however, custody seals were not placed on the outside of the cooler. The samples were received intact and were properly preserved with no signs of tampering. The reports are complete and contain results for the samples and tests requested on the COC forms.

2.2 Polychlorinated Dibenzodioxin and Polychlorinated Dibenzofuran Analyses by Method 8280B

2.2.1 Holding Times

The samples were extracted within the method holding time of 30 days from collection and analyzed within the method holding time of 45 days from extraction.

2.2.2 Instrument Performance Check

The window defining mixture was analyzed at the required frequency of once at the beginning of each 12-hour sequence. The valley between 2,3,7,8-TCDD and TCDF and the most closely eluting isomer is less than or equal to 25 percent.

2.2.3 Initial Calibration

The initial calibrations contain the correct number of concentration levels as defined in Table 1 of Method 8280B. The percent relative standard deviation (RSD) and ion abundance ratios were within method criteria.

2.2.4 Continuing Calibration

The continuing calibrations are performed at the required frequency at the beginning of each 12-hour period. The ion abundance ratios and percent differences (D) are within the method criteria.

2.2.5 Blank Analyses

2.2.5.1 Method Blanks

Method blanks were analyzed at the required frequency, and target analytes were not detected in the method blanks.

2.2.5.2 Field Blanks

One rinsate blank was analyzed for PCDD/PCDFs. Target analytes were not detected in the rinsate blank sample.

2.2.6 Isotope Dilution Internal Standard (Surrogate) Analyses

Labeled isotope dilution internal standard compounds were added to the samples, blanks, and QC samples as required. The recovery values are within the Method 8280 criteria of 25 to 150 percent with the following exception.

- The OCDD-13C recovery for sample GP-12(0-1') is 14 percent which is below the method criteria. The associated OCDD and OCDF results for this sample are qualified as estimated (J).

2.2.7 Cleanup Recovery Internal Standard Analyses

The labeled cleanup recovery internal standard was added to the samples (and associated QC samples) that required cleanup. The cleanup recovery internal standards meet the Method 8280B criteria of 25 to 150 percent recovery for isotope dilution internal standards. (Method 8280 does not list criteria for the cleanup recovery internal standard.)

2.2.8 Matrix Spike and Duplicate Analyses

Matrix spikes and duplicates were analyzed as required and the recovery and RPD values are within the laboratory's control limits with the following exceptions.

- The 1,2,3,4,6,7,8-HpCDF recoveries for samples DDSD1 MS and MSD are 0 percent and 163 percent respectively, which exceed the laboratory control limit of 67 to 150 percent. The RPD between the MS and MSD is 200 percent, which also exceeds the laboratory control limit of 20 percent.

The 1,2,3,4,6,7,8-HpCDF result for sample DDSD1 is an Estimated Maximum Possible Concentration (EMPC) qualified by the laboratory as having a PCDE interference. The data are not further qualified based on MS/MSD data.

- The 1,2,3,4,6,7,8-HpCDD recoveries for samples DDSD1 MS and MSD are 423 and 334 percent, respectively, which exceed the laboratory control limits of 69 to 131 percent. The RPD between the MS and MSD is 23 percent, which also exceeds the laboratory control limit of 20 percent. The 1,2,3,4,6,7,8-HpCDD result for sample DDSD1 is qualified as estimated (J).

- The RPD for 1,2,3,6,7,8-HxCDF is 28.1 percent, which exceeds the 20 percent laboratory QC limit. The 1,2,3,6,7,8-HxCDF result for sample DDSD1 is also qualified by the laboratory as having a PCDE interference. The 1,2,3,6,7,8-HxCDF result for sample DDSD1 is an Estimated Maximum Possible Concentration (EMPC) qualified by the laboratory as having a PCDE interference. The data are not further qualified based on MS/MSD data.

- The OCDF recovery of sample DDSD1 MS is 174 percent, which exceeds the laboratory control limit of 50 to 127 percent. The OCDF RPD between samples DDSD1 MS and MSD is 39 percent, which exceeds the laboratory QC limit of 20 percent. The data are not qualified as the LCS and MSD recoveries are within QC limits and a trend is not identified.

- The OCDD recoveries of samples DDSD1 MS and MSD are 1856 and 1143 percent, respectively, which exceed the laboratory control limits of 79 to 136 percent. The RPD between the MS and MSD is 47.5 which also exceeds the laboratory control limit of 20 percent. The data are not qualified as the concentration of OCDD in the parent sample is significantly greater than the spike value.

2.2.9 Laboratory Control Sample Analyses

LCSs were analyzed to monitor method performance. The percent recovery values are within the laboratory control limits.

2.2.10 Compound Identification

The ion abundance ratios of positive results were compared to the method criteria and are acceptable. Second column confirmation analysis of 2,3,7,8-TCDF was not required because there are no positive 2,3,7,8-TCDF results.

2.2.11 Laboratory Reporting Limits

The laboratory reporting limits were consistent with method reporting limits and meet the 1 ug/kg industrial screening level for soil except for those results with reporting limits elevated due to S/N ratios.

2.2.12 Field Duplicates

Sample DUP-01 is a field duplicate of sample GP-14 (1-2'). Field duplicate precision is acceptable as shown by the RPD values listed in the following table.

Table 2—Field Duplicate Precision

Sample ID	Duplicate ID	Analyte	Sample Value[a]	Duplicate Value[a]	RPD[b]
GP-14 (1-2')	DUP-01	1,2,3,4,6,7,8-HpCDF	6.8	8.7	24.5
		1,2,3,4,6,7,8-HpCDD	12	15	22.2
		OCDF	7.2	11	41.8
		OCDD	130	150	14.3

[a] Results are in ug/kg

[b] Relative percent difference

2.2.13 Overall Assessment of Data Usability

The usability of the data is based on the EPA guidance documents noted previously. Upon consideration of the information presented here, the data are acceptable with qualification. The data qualifier flags modify the usefulness of the individual values. The data qualifiers are provided in Table 3. The following flag changes were also identified in the validation:

- The laboratory applied (A) qualifiers indicating raised reporting limits due to S/N ratios were removed from the data for consistency with EPA methodology for data qualification.
- In accordance with Method 8280, the laboratory reported several results as Estimated Maximum Possible Concentrations (EMPC) with (E) qualifiers indicating PCDE interferences. The E qualifiers are replaced with EMPC qualifiers to indicate that the result is an EMPC.
- The following results were reported over the calibration range of the instrument. The results are qualified as estimated (J).

Sample ID	Analyte	Qualification	Reason for Qualification
GP-12 (0-1')	1,2,3,4,6,7,8-HpCDD	J	Concentration exceeds calibration range
	1,2,3,4,6,7,8-HpCDF	J	Concentration exceeds calibration range
GP-12 (1-2')	OCDD	J	Concentration exceeds calibration range
GP-14 (0-1')	1,2,3,4,6,7,8-HpCDD	J	Concentration exceeds calibration range
	OCDD	J	Concentration exceeds calibration range
	OCDF	J	Concentration exceeds calibration range
DUP-01	OCDD	J	Concentration exceeds calibration range
GP-14 (1-2')	OCDD	J	Concentration exceeds calibration range
GP-18 (0-1')	OCDD	J	Concentration exceeds calibration range
DDSD1 (0-1')	OCDD	J	Concentration exceeds calibration range
DDSD16 (0-1')	OCDD	J	Concentration exceeds calibration range

3.0 Data Qualifier Definitions

3.1 Organic Data Qualifiers

The following data validation qualifiers were used in the review of this data set. These qualifiers are from the *Contract Laboratory Program National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans Data Review.*

U The analyte was analyzed for but not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the samples and meet quality control criteria. The presence or absence of the analyte cannot be verified.

4.0 References

USEPA. 2005. Contract Laboratory Program National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans Data Review. United States Environmental Protection Agency. Office of Superfund Remediation and Thecnolgy Innovation. September 2005.

USEPA. 1996. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) Third Edition, Updates I, II, IIA, IIB, and III. United States Environmental Protection Agency. Office of Solid Waste. December 1996.

5.0 Summary of Qualified Data

The following data qualifiers were required:

Table 3—Summary of Qualified Data

Sample ID	Analyte	Qualification	Reason for Qualification
GP-12 (0-1')	OCDD	J	Internal standard recovery < 25%
	OCDF	J	Internal standard recovery < 25%
GP-12 (0-1')	1,2,3,4,6,7,8-HpCDD	J	Concentration exceeds calibration range
	1,2,3,4,6,7,8-HpCDF	J	Concentration exceeds calibration range
GP-12 (1-2')	OCDD	J	Concentration exceeds calibration range
GP-14 (0-1')	1,2,3,4,6,7,8-HpCDD	J	Concentration exceeds calibration range
	OCDD	J	Concentration exceeds calibration range
	OCDF	J	Concentration exceeds calibration range
DUP-01	OCDD	J	Concentration exceeds calibration range
GP-14 (1-2')	OCDD	J	Concentration exceeds calibration range
GP-18 (0-1')	OCDD	J	Concentration exceeds calibration range
DDSD1 (0-1')	OCDD	J	Concentration exceeds calibration range
DDSD16 (0-1')	OCDD	J	Concentration exceeds calibration range

In addition, the following flag changes were identified in the validation:

- The laboratory applied (A) qualifiers indicating raised reporting limits were removed from the data for consistency with EPA methodology for data qualification.
- In accordance with Method 8280, the laboratory reported several results as Estimated Maximum Possible Concentrations (EMPC) with (E) qualifiers indicating PCDE interferences. The E qualifiers are replaced with EMPC qualifiers to indicate that the result is an EMPC.

Pace Analytical™

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8280 Analysis Results

Client - International Paper Company _ Premo Group

Client's Sample ID	GP-18 (0-1')		
Lab Sample ID	1083073001		
Filename	110608_11060811		
Injected By	JLJ	Matrix	SOLID
Total Amount Extracted	10.0 g	Dilution	NA
% Moisture	NA	Collected	10/20/2008
ICAL Date	11/05/2008	Received	10/22/2008
CCal Filename(s)	110608_11060802 & 110608_11060819	Extracted	10/27/2008
Method Blank ID	BLANK 102708	Analyzed	11/06/2008 15:54

Native Isomers	Conc ug/Kg	EMPC ug/Kg	PRL ug/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0		2,3,7,8-TCDF-13C	50.00	93
Total TCDF	ND	-----	1.0		2,3,7,8-TCDD-13C	50.00	91
					1,2,3,6,7,8-HxCDD-13C	50.00	101
2,3,7,8-TCDD	ND	-----	1.0		1,2,3,4,6,7,8-HpCDF-13C	100.00	106
Total TCDD	ND	-----	1.0		OCDD-13C	100.00	102
1,2,3,7,8-PeCDF	ND	-----	1.0		1,2,3,4-TCDD-13C	50.00	NA
2,3,4,7,8-PeCDF	ND	-----	1.0		1,2,3,7,8,9-HxCDD-13C	50.00	NA
Total PeCDF	1.4	-----	1.0				
					2,3,7,8-TCDD-37Cl4	25.00	96
1,2,3,7,8-PeCDD	ND	-----	1.0				
Total PeCDD	ND	-----	1.0				
1,2,3,4,7,8-HxCDF	ND	-----	1.0				
1,2,3,6,7,8-HxCDF	-----	1.1	1.0	E	EMPC		
2,3,4,6,7,8-HxCDF	ND	-----	1.0				
1,2,3,7,8,9-HxCDF	ND	-----	1.0				
Total HxCDF	2.9	-----	1.0				
1,2,3,4,7,8-HxCDD	ND	-----	1.0				
1,2,3,6,7,8-HxCDD	1.8	-----	1.0	J			
1,2,3,7,8,9-HxCDD	ND	-----	1.0				
Total HxCDD	4.4	-----	1.0				
1,2,3,4,6,7,8-HpCDF	-----	15.0	1.0	E	EMPC		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.0				
Total HpCDF	6.8	-----	1.0				
1,2,3,4,6,7,8-HpCDD	41.0	-----	1.0				
Total HpCDD	64.0	-----	1.0				
OCDF	10.0	-----	1.0				
OCDD	380.0	-----	1.3	A J			

Results reported on a total weight basis

MB 12/9/08

Conc = Concentration (Totals Include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
B = Less than 10 times higher than method blank level
P = Recovery outside of target range
Nn = Value obtained from additional analysis
A =PRL based on signal to noise
J = Concentration detected is below the calibration range
* = See discussion

PRL = Pace Reporting Limit
LOD = Limit of Detection
I = Interference
E = PCDE Interference
S = Saturated signal
ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Report No.....1083073

REPORT OF LABORATORY ANALYSIS

Pace Analytical™

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8280 Analysis Results

Client - International Paper Company _ Premo Group

Client's Sample ID	GP-18 (1-2')		
Lab Sample ID	1083073002		
Filename	110608_11060812		
Injected By	JLJ	Matrix	SOLID
Total Amount Extracted	10.0 g	Dilution	NA
% Moisture	NA	Collected	10/20/2008
ICAL Date	11/05/2008	Received	10/22/2008
CCal Filename(s)	110608_11060802 & 110608_11060819	Extracted	10/27/2008
Method Blank ID	BLANK 102708	Analyzed	11/06/2008 16:33

Native Isomers	Conc ug/Kg	EMPC ug/Kg	PRL ug/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	50.00	91
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	50.00	89
				1,2,3,6,7,8-HxCDD-13C	50.00	103
2,3,7,8-TCDD	ND	-----	1.0	1,2,3,4,6,7,8-HpCDF-13C	100.00	100
Total TCDD	ND	-----	1.0	OCDD-13C	100.00	81
1,2,3,7,8-PeCDF	ND	-----	1.0	1,2,3,4-TCDD-13C	50.00	NA
2,3,4,7,8-PeCDF	ND	-----	1.0	1,2,3,7,8,9-HxCDD-13C	50.00	NA
Total PeCDF	ND	-----	1.0			
				2,3,7,8-TCDD-37Cl4	25.00	90
1,2,3,7,8-PeCDD	ND	-----	1.0			
Total PeCDD	ND	-----	1.0			
1,2,3,4,7,8-HxCDF	ND	-----	1.0			
1,2,3,6,7,8-HxCDF	ND	-----	1.0			
2,3,4,6,7,8-HxCDF	ND	-----	1.0			
1,2,3,7,8,9-HxCDF	ND	-----	1.0			
Total HxCDF	ND	-----	1.0			
1,2,3,4,7,8-HxCDD	ND	-----	1.0			
1,2,3,6,7,8-HxCDD	ND	-----	1.0			
1,2,3,7,8,9-HxCDD	ND	-----	1.0			
Total HxCDD	ND	-----	1.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	1.0			
1,2,3,4,7,8,9-HpCDF	ND	-----	1.0			
Total HpCDF	ND	-----	1.0			
1,2,3,4,6,7,8-HpCDD	ND	-----	1.0			
Total HpCDD	ND	-----	1.0			
OCDF	ND	-----	1.0			
OCDD	2.4	-----	1.0 J			

Results reported on a total weight basis

MB 12/9/08

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P = Recovery outside of target range
Nn = Value obtained from additional analysis
A =PRL based on signal to noise
J = Concentration detected is below the calibration range
* = See discussion

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E = PCDE Interference
S = Saturated signal
ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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Fax: 612- 607-6444

Pace Analytical™

Method 8280 Analysis Results

Client - International Paper Company _ Premo Group

Client's Sample ID	GP-12 (0-1')		
Lab Sample ID	1083073003		
Filename	110608_11060813		
Injected By	JLJ	Matrix	SOLID
Total Amount Extracted	10.0 g	Dilution	NA
% Moisture	NA	Collected	10/20/2008
ICAL Date	11/05/2008	Received	10/22/2008
CCal Filename(s)	110608_11060802 & 110608_11060819	Extracted	10/27/2008
Method Blank ID	BLANK 102708	Analyzed	11/06/2008 17:13

Native Isomers	Conc ug/Kg	EMPC ug/Kg	PRL ug/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	50.00	104 I
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	50.00	93
				1,2,3,6,7,8-HxCDD-13C	50.00	102
2,3,7,8-TCDD	ND	-----	1.0	1,2,3,4,6,7,8-HpCDF-13C	100.00	107
Total TCDD	ND	-----	1.0	OCDD-13C	100.00	14 IP
1,2,3,7,8-PeCDF	ND	-----	1.0	1,2,3,4-TCDD-13C	50.00	NA
2,3,4,7,8-PeCDF	ND	-----	1.2 A	1,2,3,7,8,9-HxCDD-13C	50.00	NA
Total PeCDF	7.9	-----	1.0			
				2,3,7,8-TCDD-37Cl4	25.00	98
1,2,3,7,8-PeCDD	ND	-----	1.0			
Total PeCDD	1.2	-----	1.0			
1,2,3,4,7,8-HxCDF	-----	5.8	1.6 EA EMPC			
1,2,3,6,7,8-HxCDF	-----	12.0	1.6 EA EMPC			
2,3,4,6,7,8-HxCDF	ND	-----	3.8 A			
1,2,3,7,8,9-HxCDF	ND	-----	1.0			
Total HxCDF	66.0	-----	1.8			
1,2,3,4,7,8-HxCDD	5.1	-----	1.0			
1,2,3,6,7,8-HxCDD	19.0	-----	1.0			
1,2,3,7,8,9-HxCDD	8.3	-----	1.0			
Total HxCDD	59.0	-----	1.0			
1,2,3,4,6,7,8-HpCDF	58.0	-----	1.0 J			
1,2,3,4,7,8,9-HpCDF	8.2	-----	1.0			
Total HpCDF	220.0	-----	1.0			
1,2,3,4,6,7,8-HpCDD	410.0	-----	1.0 J			
Total HpCDD	530.0	-----	1.0			
OCDF	1500.0	-----	22.0 A J			
OCDD	4700.0	-----	55.0 A J			

Results reported on a total weight basis

MB 12/9/08

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Nn = Value obtained from additional analysis
A =PRL based on signal to noise
J = Concentration detected is below the calibration range
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S = Saturated signal
ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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REPORT OF LABORATORY ANALYSIS

Pace Analytical™

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Method 8280 Analysis Results

Client - International Paper Company _ Premo Group

Client's Sample ID	GP-12 (1-2')		
Lab Sample ID	1083073004		
Filename	110608_11060814		
Injected By	JLJ	Matrix	SOLID
Total Amount Extracted	10.0 g	Dilution	NA
% Moisture	NA	Collected	10/20/2008
ICAL Date	11/05/2008	Received	10/22/2008
CCal Filename(s)	110608_11060802 & 110608_11060819	Extracted	10/27/2008
Method Blank ID	BLANK 102708	Analyzed	11/06/2008 17:52

Native Isomers	Conc ug/Kg	EMPC ug/Kg	PRL ug/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	50.00	97
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	50.00	95
				1,2,3,6,7,8-HxCDD-13C	50.00	109
2,3,7,8-TCDD	ND	-----	1.0	1,2,3,4,6,7,8-HpCDF-13C	100.00	110
Total TCDD	ND	-----	1.0	OCDD-13C	100.00	109
1,2,3,7,8-PeCDF	ND	-----	1.0	1,2,3,4-TCDD-13C	50.00	NA
2,3,4,7,8-PeCDF	ND	-----	1.0	1,2,3,7,8,9-HxCDD-13C	50.00	NA
Total PeCDF	ND	-----	1.0			
				2,3,7,8-TCDD-37Cl4	25.00	95
1,2,3,7,8-PeCDD	ND	-----	1.0			
Total PeCDD	ND	-----	1.0			
1,2,3,4,7,8-HxCDF	ND	-----	1.0			
1,2,3,6,7,8-HxCDF	ND	-----	1.0			
2,3,4,6,7,8-HxCDF	ND	-----	1.0			
1,2,3,7,8,9-HxCDF	ND	-----	1.0			
Total HxCDF	ND	-----	1.0			
1,2,3,4,7,8-HxCDD	ND	-----	1.0			
1,2,3,6,7,8-HxCDD	ND	-----	1.0			
1,2,3,7,8,9-HxCDD	ND	-----	1.0			
Total HxCDD	ND	-----	1.0			
1,2,3,4,6,7,8-HpCDF	2.7	-----	1.0			
1,2,3,4,7,8,9-HpCDF	ND	-----	1.0			
Total HpCDF	8.8	-----	1.0			
1,2,3,4,6,7,8-HpCDD	22.0	-----	1.0			
Total HpCDD	32.0	-----	1.0			
OCDF	11.0	-----	1.0			
OCDD	290.0	-----	1.2 A J			

Results reported on a total weight basis

MB 12/9/08

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P = Recovery outside of target range
Nn = Value obtained from additional analysis
A =PRL based on signal to noise
J = Concentration detected is below the calibration range
* = See discussion

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LOD = Limit of Detection
I = Interference
E = PCDE Interference
S = Saturated signal
ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Report No.....1083073

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Pace Analytical™
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Method 8280 Analysis Results

Client - International Paper Company _ Premo Group

Client's Sample ID	GP-14 (0-1')		
Lab Sample ID	1083073005		
Filename	110608_11060815		
Injected By	JLJ	Matrix	SOLID
Total Amount Extracted	10.0 g	Dilution	NA
% Moisture	NA	Collected	10/21/2008
ICAL Date	11/05/2008	Received	10/22/2008
CCal Filename(s)	110608_11060802 & 110608_11060819	Extracted	10/27/2008
Method Blank ID	BLANK 102708	Analyzed	11/06/2008 18:32

Native Isomers	Conc ug/Kg	EMPC ug/Kg	PRL ug/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	50.00	90
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	50.00	88
				1,2,3,6,7,8-HxCDD-13C	50.00	102
2,3,7,8-TCDD	ND	-----	1.0	1,2,3,4,6,7,8-HpCDF-13C	100.00	105
Total TCDD	ND	-----	1.0	OCDD-13C	100.00	82 I
1,2,3,7,8-PeCDF	ND	-----	1.0	1,2,3,4-TCDD-13C	50.00	NA
2,3,4,7,8-PeCDF	ND	-----	1.0	1,2,3,7,8,9-HxCDD-13C	50.00	NA
Total PeCDF	2.2	-----	1.0			
				2,3,7,8-TCDD-37Cl4	25.00	99
1,2,3,7,8-PeCDD	ND	-----	1.0			
Total PeCDD	ND	-----	1.0			
1,2,3,4,7,8-HxCDF	ND	-----	1.1 A			
1,2,3,6,7,8-HxCDF	-----	4.4	1.1 EA EMPC			
2,3,4,6,7,8-HxCDF	ND	-----	1.2 A			
1,2,3,7,8,9-HxCDF	ND	-----	1.0			
Total HxCDF	20.0	-----	1.0			
1,2,3,4,7,8-HxCDD	ND	-----	1.0			
1,2,3,6,7,8-HxCDD	5.6	-----	1.0			
1,2,3,7,8,9-HxCDD	1.7	-----	1.0			
Total HxCDD	14.0	-----	1.0			
1,2,3,4,6,7,8-HpCDF	-----	79.0	1.0 E EMPC			
1,2,3,4,7,8,9-HpCDF	1.8	-----	1.0			
Total HpCDF	56.0	-----	1.0			
1,2,3,4,6,7,8-HpCDD	140.0	-----	1.0 J			
Total HpCDD	190.0	-----	1.0			
OCDF	120.0	-----	1.0 J			
OCDD	1200.0	-----	7.0 A J			

Results reported on a total weight basis

TMB 12/9/08

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Nn = Value obtained from additional analysis
A =PRL based on signal to noise
J = Concentration detected is below the calibration range
* = See discussion

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ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Report No.....1083073

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Method 8280 Analysis Results

Client - International Paper Company _ Premo Group

Client's Sample ID	GP-14 (1-2')		
Lab Sample ID	1083073006		
Filename	110508_11050814		
Injected By	JLJ	Matrix	SOLID
Total Amount Extracted	10.0 g	Dilution	NA
% Moisture	NA	Collected	10/21/2008
ICAL Date	11/05/2008	Received	10/22/2008
CCal Filename(s)	110508_11050805 & 110508_11050820	Extracted	10/27/2008
Method Blank ID	BLANK 102708	Analyzed	11/05/2008 18:42

Native Isomers	Conc ug/Kg	EMPC ug/Kg	PRL ug/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	50.00	84
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	50.00	84
				1,2,3,6,7,8-HxCDD-13C	50.00	103
2,3,7,8-TCDD	ND	-----	1.0	1,2,3,4,6,7,8-HpCDF-13C	100.00	107
Total TCDD	ND	-----	1.0	OCDD-13C	100.00	105
1,2,3,7,8-PeCDF	ND	-----	1.0	1,2,3,4-TCDD-13C	50.00	NA
2,3,4,7,8-PeCDF	ND	-----	1.0	1,2,3,7,8,9-HxCDD-13C	50.00	NA
Total PeCDF	ND	-----	1.0			
				2,3,7,8-TCDD-37Cl4	25.00	88
1,2,3,7,8-PeCDD	ND	-----	1.0			
Total PeCDD	ND	-----	1.0			
1,2,3,4,7,8-HxCDF	ND	-----	1.0			
1,2,3,6,7,8-HxCDF	ND	-----	1.0			
2,3,4,6,7,8-HxCDF	ND	-----	1.0			
1,2,3,7,8,9-HxCDF	ND	-----	1.0			
Total HxCDF	1.2	-----	1.0			
1,2,3,4,7,8-HxCDD	ND	-----	1.0			
1,2,3,6,7,8-HxCDD	ND	-----	1.0			
1,2,3,7,8,9-HxCDD	ND	-----	1.0			
Total HxCDD	ND	-----	1.0			
1,2,3,4,6,7,8-HpCDF	-----	6.8	1.0	E EMPC		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.0			
Total HpCDF	ND	-----	1.0			
1,2,3,4,6,7,8-HpCDD	12.0	-----	1.0			
Total HpCDD	18.0	-----	1.0			
OCDF	7.2	-----	1.0			
OCDD	130.0	-----	1.0	J		

Results reported on a total weight basis

MB 12/9/08

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Nn = Value obtained from additional analysis
A =PRL based on signal to noise
J = Concentration detected is below the calibration range
* = See discussion

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ND = Not Detected
NA = Not Applicable
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Report No.....1083073

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Pace Analytical™

Method 8280 Analysis Results

Client - International Paper Company _ Premo Group

Client's Sample ID	DDSD1 (0-1)		
Lab Sample ID	1083073007		
Filename	110508_11050815		
Injected By	JLJ	Matrix	SOLID
Total Amount Extracted	10.0 g	Dilution	NA
% Moisture	NA	Collected	10/21/2008
ICAL Date	11/05/2008	Received	10/22/2008
CCal Filename(s)	110508_11050805 & 110508_11050820	Extracted	10/27/2008
Method Blank ID	BLANK 102708	Analyzed	11/05/2008 19:22

Native Isomers	Conc ug/Kg	EMPC ug/Kg	PRL ug/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0		2,3,7,8-TCDF-13C	50.00	101
Total TCDF	ND	-----	1.0		2,3,7,8-TCDD-13C	50.00	101
					1,2,3,6,7,8-HxCDD-13C	50.00	108
2,3,7,8-TCDD	ND	-----	1.0		1,2,3,4,6,7,8-HpCDF-13C	100.00	116
Total TCDD	ND	-----	1.0		OCDD-13C	100.00	121
1,2,3,7,8-PeCDF	ND	-----	1.0		1,2,3,4-TCDD-13C	50.00	NA
2,3,4,7,8-PeCDF	ND	-----	1.0		1,2,3,7,8,9-HxCDD-13C	50.00	NA
Total PeCDF	1.2	-----	1.0				
					2,3,7,8-TCDD-37Cl4	25.00	96
1,2,3,7,8-PeCDD	ND	-----	1.0				
Total PeCDD	ND	-----	1.0				
1,2,3,4,7,8-HxCDF	ND	-----	1.0				
1,2,3,6,7,8-HxCDF	-----	1.7	1.0	E	EMPC		
2,3,4,6,7,8-HxCDF	ND	-----	1.0				
1,2,3,7,8,9-HxCDF	ND	-----	1.0				
Total HxCDF	6.8	-----	1.0				
1,2,3,4,7,8-HxCDD	ND	-----	1.0				
1,2,3,6,7,8-HxCDD	2.2	-----	1.0	J			
1,2,3,7,8,9-HxCDD	ND	-----	1.0				
Total HxCDD	6.6	-----	1.0				
1,2,3,4,6,7,8-HpCDF	-----	32.0	1.0	E	EMPC		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.0				
Total HpCDF	15.0	-----	1.0				
1,2,3,4,6,7,8-HpCDD	56.0	-----	1.0	J			
Total HpCDD	87.0	-----	1.0				
OCDF	26.0	-----	1.0				
OCDD	630.0	-----	2.5	A J			

Results reported on a total weight basis

MB 12/9/08

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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Nn = Value obtained from additional analysis
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J = Concentration detected is below the calibration range
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S = Saturated signal
ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Report No.....1083073

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8280 Analysis Results

Client - International Paper Company _ Premo Group

Client's Sample ID	DDSD16 (0-1)		
Lab Sample ID	1083073008		
Filename	110508_11050816		
Injected By	JLJ	Matrix	SOLID
Total Amount Extracted	10.0 g	Dilution	NA
% Moisture	NA	Collected	10/21/2008
ICAL Date	11/05/2008	Received	10/22/2008
CCal Filename(s)	110508_11050805 & 110508_11050820	Extracted	10/27/2008
Method Blank ID	BLANK 102708	Analyzed	11/05/2008 20:01

Native Isomers	Conc ug/Kg	EMPC ug/Kg	PRL ug/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	50.00	86
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	50.00	87
				1,2,3,6,7,8-HxCDD-13C	50.00	94
2,3,7,8-TCDD	ND	-----	1.0	1,2,3,4,6,7,8-HpCDF-13C	100.00	95
Total TCDD	ND	-----	1.0	OCDD-13C	100.00	97
1,2,3,7,8-PeCDF	ND	-----	1.0	1,2,3,4-TCDD-13C	50.00	NA
2,3,4,7,8-PeCDF	ND	-----	1.0	1,2,3,7,8,9-HxCDD-13C	50.00	NA
Total PeCDF	ND	-----	1.0			
				2,3,7,8-TCDD-37Cl4	25.00	87
1,2,3,7,8-PeCDD	ND	-----	1.0			
Total PeCDD	ND	-----	1.0			
1,2,3,4,7,8-HxCDF	ND	-----	1.0			
1,2,3,6,7,8-HxCDF	ND	-----	1.0			
2,3,4,6,7,8-HxCDF	ND	-----	1.0			
1,2,3,7,8,9-HxCDF	ND	-----	1.0			
Total HxCDF	3.0	-----	1.0			
1,2,3,4,7,8-HxCDD	ND	-----	1.0			
1,2,3,6,7,8-HxCDD	ND	-----	1.0			
1,2,3,7,8,9-HxCDD	ND	-----	1.0			
Total HxCDD	1.3	-----	1.0			
1,2,3,4,6,7,8-HpCDF	-----	3.9	1.0	E EMPC		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.0			
Total HpCDF	6.1	-----	1.0			
1,2,3,4,6,7,8-HpCDD	21.0	-----	1.0			
Total HpCDD	33.0	-----	1.0			
OCDF	12.0	-----	1.0			
OCDD	190.0	-----	1.0	J		

Results reported on a total weight basis

MB 12/9/08

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
B = Less than 10 times higher than method blank level
P = Recovery outside of target range
Nn = Value obtained from additional analysis
A =PRL based on signal to noise
J = Concentration detected is below the calibration range
* = See discussion

PRL = Pace Reporting Limit
LOD = Limit of Detection
I = Interference
E = PCDE Interference
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NA = Not Applicable
NC = Not Calculated

Report No.....1083073

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Minneapolis, MN 55414
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Method 8280 Analysis Results

Client - International Paper Company _ Premo Group

Client's Sample ID	DDSD14 (0-1)		
Lab Sample ID	1083073009		
Filename	110508_11050817		
Injected By	JLJ	Matrix	SOLID
Total Amount Extracted	10.0 g	Dilution	NA
% Moisture	NA	Collected	10/21/2008
ICAL Date	11/05/2008	Received	10/22/2008
CCal Filename(s)	110508_11050805 & 110508_11050820	Extracted	10/27/2008
Method Blank ID	BLANK 102708	Analyzed	11/05/2008 20:41

Native Isomers	Conc ug/Kg	EMPC ug/Kg	PRL ug/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0		2,3,7,8-TCDF-13C	50.00	98
Total TCDF	ND	-----	1.0		2,3,7,8-TCDD-13C	50.00	98
					1,2,3,6,7,8-HxCDD-13C	50.00	105
2,3,7,8-TCDD	ND	-----	1.0		1,2,3,4,6,7,8-HpCDF-13C	100.00	113
Total TCDD	ND	-----	1.0		OCDD-13C	100.00	104
1,2,3,7,8-PeCDF	ND	-----	1.0		1,2,3,4-TCDD-13C	50.00	NA
2,3,4,7,8-PeCDF	ND	-----	1.0		1,2,3,7,8,9-HxCDD-13C	50.00	NA
Total PeCDF	ND	-----	1.0				
					2,3,7,8-TCDD-37Cl4	25.00	87
1,2,3,7,8-PeCDD	ND	-----	1.0				
Total PeCDD	ND	-----	1.0				
1,2,3,4,7,8-HxCDF	ND	-----	1.0				
1,2,3,6,7,8-HxCDF	ND	-----	1.0				
2,3,4,6,7,8-HxCDF	ND	-----	1.0				
1,2,3,7,8,9-HxCDF	ND	-----	1.0				
Total HxCDF	ND	-----	1.0				
1,2,3,4,7,8-HxCDD	ND	-----	1.0				
1,2,3,6,7,8-HxCDD	ND	-----	1.0				
1,2,3,7,8,9-HxCDD	ND	-----	1.0				
Total HxCDD	ND	-----	1.0				
1,2,3,4,6,7,8-HpCDF	-----	4.4	1.0	E	EMPC		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.0				
Total HpCDF	1.7	-----	1.0	J			
1,2,3,4,6,7,8-HpCDD	5.2	-----	1.0				
Total HpCDD	8.3	-----	1.0				
OCDF	3.7	-----	1.0	J			
OCDD	68.0	-----	1.0				

Results reported on a total weight basis

MB 12/9/08

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Nn = Value obtained from additional analysis
A =PRL based on signal to noise
J = Concentration detected is below the calibration range
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Method 8280 Analysis Results

Client - International Paper Company _ Premo Group

Client's Sample ID	D2-C (0-1)		
Lab Sample ID	1083073010		
Filename	110508_11050818		
Injected By	JLJ	Matrix	SOLID
Total Amount Extracted	10.0 g	Dilution	NA
% Moisture	NA	Collected	10/21/2008
ICAL Date	11/05/2008	Received	10/22/2008
CCal Filename(s)	110508_11050805 & 110508_11050820	Extracted	10/27/2008
Method Blank ID	BLANK 102708	Analyzed	11/05/2008 21:20

Native Isomers	Conc ug/Kg	EMPC ug/Kg	PRL ug/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	50.00	89
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	50.00	89
				1,2,3,6,7,8-HxCDD-13C	50.00	102
2,3,7,8-TCDD	ND	-----	1.0	1,2,3,4,6,7,8-HpCDF-13C	100.00	104
Total TCDD	ND	-----	1.0	OCDD-13C	100.00	95
1,2,3,7,8-PeCDF	ND	-----	1.0	1,2,3,4-TCDD-13C	50.00	NA
2,3,4,7,8-PeCDF	ND	-----	1.0	1,2,3,7,8,9-HxCDD-13C	50.00	NA
Total PeCDF	ND	-----	1.0			
				2,3,7,8-TCDD-37Cl4	25.00	97
1,2,3,7,8-PeCDD	ND	-----	1.0			
Total PeCDD	ND	-----	1.0			
1,2,3,4,7,8-HxCDF	ND	-----	1.0			
1,2,3,6,7,8-HxCDF	ND	-----	1.0			
2,3,4,6,7,8-HxCDF	ND	-----	1.0			
1,2,3,7,8,9-HxCDF	ND	-----	1.0			
Total HxCDF	ND	-----	1.0			
1,2,3,4,7,8-HxCDD	ND	-----	1.0			
1,2,3,6,7,8-HxCDD	ND	-----	1.0			
1,2,3,7,8,9-HxCDD	ND	-----	1.0			
Total HxCDD	ND	-----	1.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	1.0			
1,2,3,4,7,8,9-HpCDF	ND	-----	1.0			
Total HpCDF	ND	-----	1.0			
1,2,3,4,6,7,8-HpCDD	ND	-----	1.0			
Total HpCDD	ND	-----	1.0			
OCDF	ND	-----	1.0			
OCDD	ND	-----	1.0			

Results reported on a total weight basis

MB 12/9/08

Conc = Concentration (Totals Include 2,3,7,8-substituted Isomers).
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B = Less than 10 times higher than method blank level
P = Recovery outside of target range
Nn = Value obtained from additional analysis
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J = Concentration detected is below the calibration range
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Method 8280 Analysis Results

Client - International Paper Company _ Premo Group

Client's Sample ID	RB		
Lab Sample ID	1083073011		
Filename	102708_10270813		
Injected By	JLJ	Matrix	WATER
Total Amount Extracted	975 mL	Dilution	NA
% Moisture	NA	Collected	10/21/2008
ICAL Date	10/17/2008	Received	10/22/2008
CCal Filename(s)	102708_10270802 & 102708_10270816	Extracted	10/27/2008
Method Blank ID	BLANK 102708	Analyzed	10/27/2008 23:22

Native Isomers	Conc ng/L	EMPC ng/L	PRL ng/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.010	2,3,7,8-TCDF-13C	50.00	87
Total TCDF	ND	-----	0.010	2,3,7,8-TCDD-13C	50.00	87
				1,2,3,6,7,8-HxCDD-13C	50.00	103
2,3,7,8-TCDD	ND	-----	0.010	1,2,3,4,6,7,8-HpCDF-13C	100.00	90
Total TCDD	ND	-----	0.010	OCDD-13C	100.00	57
1,2,3,7,8-PeCDF	ND	-----	0.010	1,2,3,4-TCDD-13C	50.00	NA
2,3,4,7,8-PeCDF	ND	-----	0.010	1,2,3,7,8,9-HxCDD-13C	50.00	NA
Total PeCDF	ND	-----	0.010			
				2,3,7,8-TCDD-37Cl4	25.00	84
1,2,3,7,8-PeCDD	ND	-----	0.010			
Total PeCDD	ND	-----	0.010			
1,2,3,4,7,8-HxCDF	ND	-----	0.010			
1,2,3,6,7,8-HxCDF	ND	-----	0.010			
2,3,4,6,7,8-HxCDF	ND	-----	0.010			
1,2,3,7,8,9-HxCDF	ND	-----	0.010			
Total HxCDF	ND	-----	0.010			
1,2,3,4,7,8-HxCDD	ND	-----	0.010			
1,2,3,6,7,8-HxCDD	ND	-----	0.010			
1,2,3,7,8,9-HxCDD	ND	-----	0.010			
Total HxCDD	ND	-----	0.010			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.010			
1,2,3,4,7,8,9-HpCDF	ND	-----	0.010			
Total HpCDF	ND	-----	0.010			
1,2,3,4,6,7,8-HpCDD	ND	-----	0.010			
Total HpCDD	ND	-----	0.010			
OCDF	ND	-----	0.010			
OCDD	ND	-----	0.010			

YMB 12/9/08.

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Nn = Value obtained from additional analysis
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ND = Not Detected
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NC = Not Calculated

Report No.....1083073

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Method 8280 Analysis Results

Client - International Paper Company _ Premo Group

Client's Sample ID	DUP-01		
Lab Sample ID	1083073012		
Filename	110508_11050819		
Injected By	JLJ	Matrix	SOLID
Total Amount Extracted	10.0 g	Dilution	NA
% Moisture	NA	Collected	10/21/2008
ICAL Date	11/05/2008	Received	10/22/2008
CCal Filename(s)	110508_11050805 & 110508_11050820	Extracted	10/27/2008
Method Blank ID	BLANK 102708	Analyzed	11/05/2008 21:59

Native Isomers	Conc ug/Kg	EMPC ug/Kg	PRL ug/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	50.00	95
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	50.00	97
				1,2,3,6,7,8-HxCDD-13C	50.00	107
2,3,7,8-TCDD	ND	-----	1.0	1,2,3,4,6,7,8-HpCDF-13C	100.00	112
Total TCDD	ND	-----	1.0	OCDD-13C	100.00	116
1,2,3,7,8-PeCDF	ND	-----	1.0	1,2,3,4-TCDD-13C	50.00	NA
2,3,4,7,8-PeCDF	ND	-----	1.0	1,2,3,7,8,9-HxCDD-13C	50.00	NA
Total PeCDF	ND	-----	1.0			
				2,3,7,8-TCDD-37Cl4	25.00	85
1,2,3,7,8-PeCDD	ND	-----	1.0			
Total PeCDD	ND	-----	1.0			
1,2,3,4,7,8-HxCDF	ND	-----	1.0			
1,2,3,6,7,8-HxCDF	ND	-----	1.0			
2,3,4,6,7,8-HxCDF	ND	-----	1.0			
1,2,3,7,8,9-HxCDF	ND	-----	1.0			
Total HxCDF	1.6	-----	1.0			
1,2,3,4,7,8-HxCDD	ND	-----	1.0			
1,2,3,6,7,8-HxCDD	ND	-----	1.0			
1,2,3,7,8,9-HxCDD	ND	-----	1.0			
Total HxCDD	ND	-----	1.0			
1,2,3,4,6,7,8-HpCDF	-----	8.7	1.0	E EMPC		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.0			
Total HpCDF	6.7	-----	1.0			
1,2,3,4,6,7,8-HpCDD	15.0	-----	1.0			
Total HpCDD	23.0	-----	1.0			
OCDF	11.0	-----	1.0			
OCDD	150.0	-----	1.0	J		

Results reported on a total weight basis

MB 12/9/08

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